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(54) **A CIRCUIT AND DEVICE INCLUDING A TRANSISTOR AND DIODE**

(57) An inverter logic circuit comprised from a bipolar junction transistor and a zener diode. The zener diode connected between the base of the transistor and ground (or other reference voltage). The zener is reverse biased such that a leakage current through the diode allows for

sufficient current through the emitter-base terminals of the transistor when a voltage is applied across the emitter and base terminals of the transistor to turn the transistor on in the absence of an external signal to the base. As such the transistor functions as a normally on transistor.

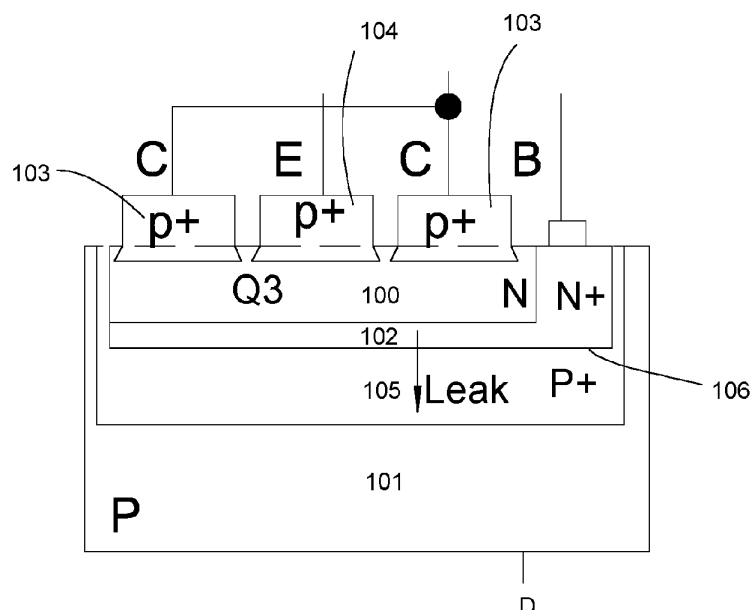


Fig 6A



## EUROPEAN SEARCH REPORT

Application Number

EP 23 18 4891

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| DOCUMENTS CONSIDERED TO BE RELEVANT                                                                                                                                                                                                                    |                                                                                       |                                                                                                                                                                                                                                                                                       |                                                 |
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| The present search report has been drawn up for all claims                                                                                                                                                                                             |                                                                                       |                                                                                                                                                                                                                                                                                       |                                                 |
| Place of search<br><b>The Hague</b>                                                                                                                                                                                                                    |                                                                                       | Date of completion of the search<br><b>2 November 2023</b>                                                                                                                                                                                                                            | Examiner<br><b>Loiseau, Ludovic</b>             |
| CATEGORY OF CITED DOCUMENTS<br>X : particularly relevant if taken alone<br>Y : particularly relevant if combined with another document of the same category<br>A : technological background<br>O : non-written disclosure<br>P : intermediate document |                                                                                       | T : theory or principle underlying the invention<br>E : earlier patent document, but published on, or after the filing date<br>D : document cited in the application<br>L : document cited for other reasons<br>.....<br>& : member of the same patent family, corresponding document |                                                 |

**ANNEX TO THE EUROPEAN SEARCH REPORT  
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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82